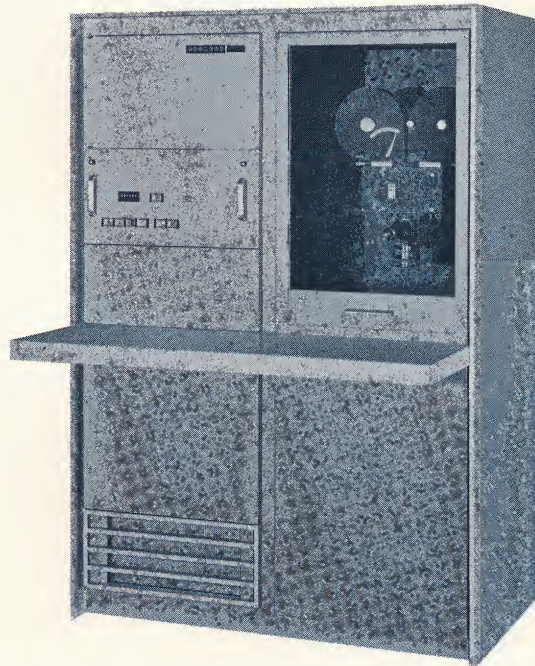


# 835

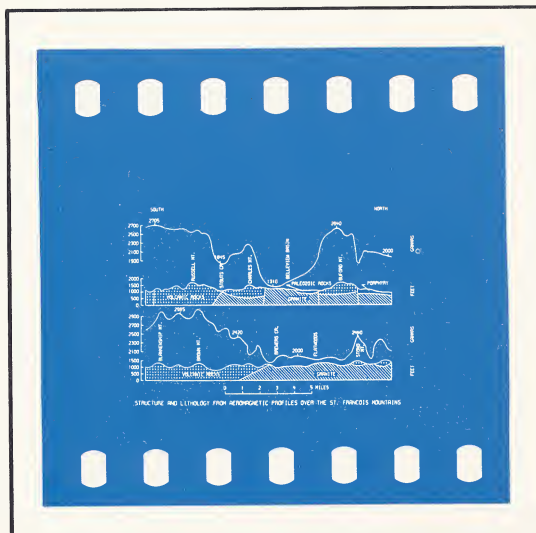
*PRELIMINARY PRODUCT NOTE*

## MODEL 835 ELECTRONIC DIGITAL PLOTTING SYSTEM

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With the introduction of the Model 835, CalComp adds a new dimension to the concept of digital plotting. Fully compatible with existing CalComp systems, this new CRT/microfilm system is precision engineered to provide ultra high-speed plotting and recording of any computer output data that can be converted to graphic form. Unlike whole-value CRT systems, the Model 835 is a true digital incremental plotter — utilizing the basic design principles and circuitry developed, perfected and patented by CalComp. It will complement rather than replace the electro-mechanical ink-on-paper digital plotters that have made CalComp the quality standard of the plotting industry.



Sample plot shown above, slightly larger than actual microfilm size, requires less than 2 seconds plotting time on Model 835 at maximum incremental rate of 100,000 steps per second.

Ultra high speed, fully incremental digital plotting, on-line or off-line

Up to 100,000 plot increments per second (equivalent to 1000 lineal inches/second)

Capable of plotting a complete 2400-ft. reel of tape in 8 minutes

Fully automatic 35mm film recording of cathode ray tube display

Compatible with current CalComp digital plotting systems

Equivalent plot size 11 x 17 inches

Standard 35mm film, double-frame format, 400-ft. capacity

All solid-state design, silicon semiconductors (except CRT)

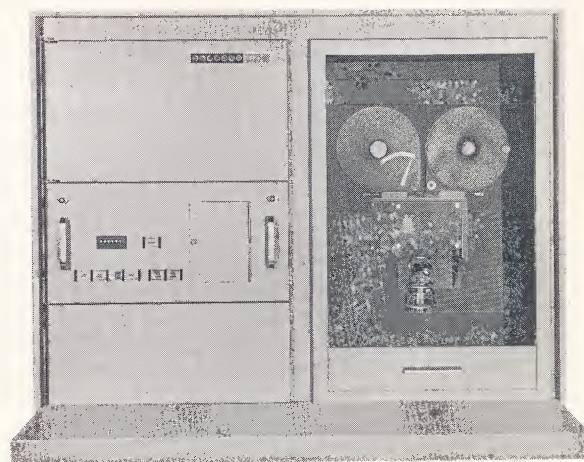
Optional desk top film viewer

## SYSTEM OPERATION

The Model 835 operates on the same basic principle as all CalComp digital incremental plotters, in that input commands from the computer are used to produce discrete incremental steps relative to the X and Y axes. In the CalComp electromechanical plotters, bidirectional step motors are used to produce movement of a pen relative to the plotting paper. In the Model 835 Electronic Digital Plotting System, the incremental plot commands produce deflection of the CRT electron beam in discrete steps. The Z-axis signals are used to raise and lower the pen in the electromechanical plotters, and to blank and unblank the electron beam in the Model 835. The CRT display is transmitted through the camera lens system and automatically recorded on 35-millimeter microfilm. At the end of each plot, the film is advanced automatically. The exposed film may be processed to produce either positive or negative transparencies for direct viewing or photographic printing. A CalComp film viewer which provides optimum magnification at 15X, is available with the system as an option.

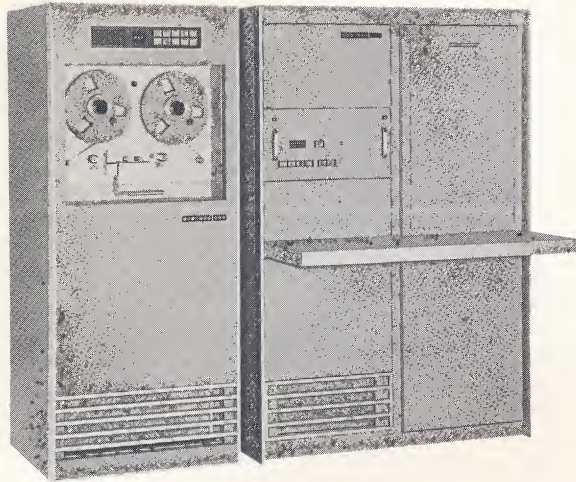
## CONTROLS AND INDICATORS

The Model 835, like all CalComp systems, is designed for ease of operation and minimum setup time. Calibration is accomplished by adjusting a single knob. Front panel pushbutton controls are provided for power on/off, plot enable, and film advance. An exposed film frame counter is also located on the front panel and additional indicators are provided for operating status (plot, ready, not ready). The calibration meter, adjustment control, and running time meter are located behind a small door in the control panel.



CONTROL PANEL AND CAMERA





**OFF-LINE SYSTEM — MODEL 835  
WITH 700 SERIES MAGNETIC TAPE UNIT**

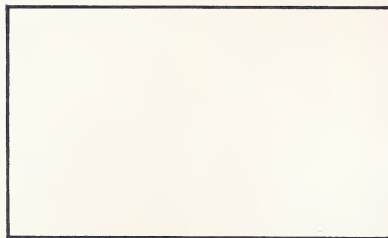
The Model 835 is designed for off-line operation with CalComp magnetic tape unit Models 760, 770 and 780. Plotting is accomplished with the tape unit in search mode, at a tape speed of 60 inches per second. The same tape unit may be used to drive either the Model 835 or a CalComp electromechanical plotter, 500 or 700 series. The plotter programs and tape format for the Model 835 are compatible with the CalComp electromechanical plotters.



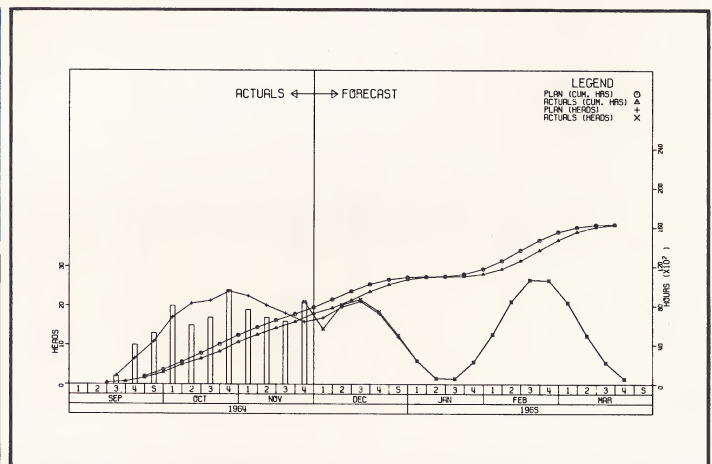
**ON-LINE SYSTEM — MODEL 835  
WITH MODEL 110 PLOTTER CONTROLLER**

The Model 835 is designed for on-line operation with CalComp Plotter Controllers. The plotting system may be used in a time-shared configuration with other on-line equipment, and is capable of accepting input commands at rates up to 100,000 characters per second. The same Plotter Controller may also be used to drive a CalComp electromechanical plotter.

## APPLICATIONS



**Manloading chart for a major development program**—one of hundreds of applications for CalComp digital incremental plotters. A graph of this relative complexity can be plotted and recorded on microfilm with the Model 835 in less than 10 seconds.



The Model 835 Electronic Digital Plotting System has a wide range of applications, and can be used in any on-line or off-line installation where the volume of digital plotting required makes it desirable to supplement an existing electromechanical ink-on-paper plotting capability. The compatibility feature of the Model 835 makes it possible to expand the graphic output capability of a computer by several orders of magnitude, without extensive reprogramming. When desired, a microfilm viewer can be used to screen the system output, and selected material may then be replotted on a CalComp electromechanical plotter. The microfilm output of the Model 835 is also suitable for photo reproduction and enlargement.

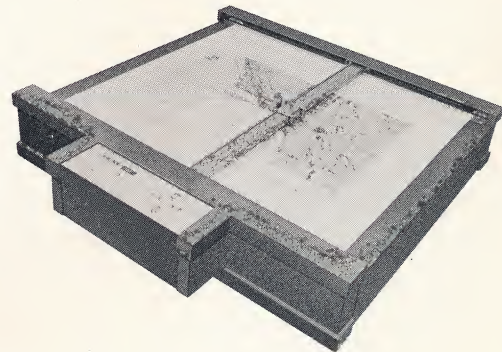
## SPECIFICATIONS

|                                            |                                                                                                                                                                                                                                            |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PLOT AREA (35mm FILM) . . . . .            | 0.733 x 1.133 inches                                                                                                                                                                                                                       |
| PLOT AREA (15X VIEWER) . . . . .           | 11 x 17 inches                                                                                                                                                                                                                             |
| EQUIVALENT INCREMENTAL STEP SIZE . . . . . | .010" at 15X magnification                                                                                                                                                                                                                 |
| PLOTTING MODE . . . . .                    | Fully incremental                                                                                                                                                                                                                          |
| CODE FORMAT . . . . .                      | CalComp standard 4-bit, full-step,<br>single character per plot command                                                                                                                                                                    |
| MAXIMUM INCREMENTAL STEP RATE . . . . .    | <b>On-Line:</b> 100,000 per second<br>(1000 lineal in./sec. at 15X magnification)<br><b>Off-Line:</b> 33,000 per second (Model 780),<br>16,500 per second (760,770), at tape speed of 60 ips<br>(330 lineal in./sec. at 15X magnification) |
| RESOLUTION ON 11" X 17" VIEW . . . . .     | 1100(Y) x 1700(X) plotting matrix                                                                                                                                                                                                          |
| STABILITY . . . . .                        | Less than $\pm 0.5\%$ drift in 8 hours                                                                                                                                                                                                     |
| ACCURACY . . . . .                         | Better than 1.0% of full scale                                                                                                                                                                                                             |
| CATHODE RAY TUBE . . . . .                 | 17" rectangular, P11 phosphor,<br>magnetic deflection                                                                                                                                                                                      |
| CAMERA . . . . .                           | 35mm, sprocket drive,<br>fully automatic                                                                                                                                                                                                   |
| POWER REQUIREMENTS . . . . .               | 115 VAC, 60 cps, single phase                                                                                                                                                                                                              |
| OVERALL DIMENSIONS . . . . .               | <b>Width:</b> 46"<br><b>Height:</b> 68"<br><b>Depth:</b> 26"<br>(plus 12" shelf)                                                                                                                                                           |

### CALCOMP INK-ON-PAPER DIGITAL PLOTTING SYSTEMS

CalComp offers a complete line of digital plotters for computer controlled preparation of quality ink-on-paper graphic presentations. All are suitable for either off-line or on-line operation. The product line includes both drum and flatbed types in two model series. The 500 series operates at incremental speeds up to 300 steps-per-second. The 700 series operates at incremental speeds up to 450 steps-per-second, and features the exclusive Zip Mode® for high-speed plotting of straight lines and smooth curves. This series also incorporates an "electronic gear shift" for full-step/half-step intermix. (For further details on CalComp digital plotting systems, see Bulletin No. 175.)

### CALCOMP MODEL 502 FLATBED DIGITAL INCREMENTAL PLOTTER



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